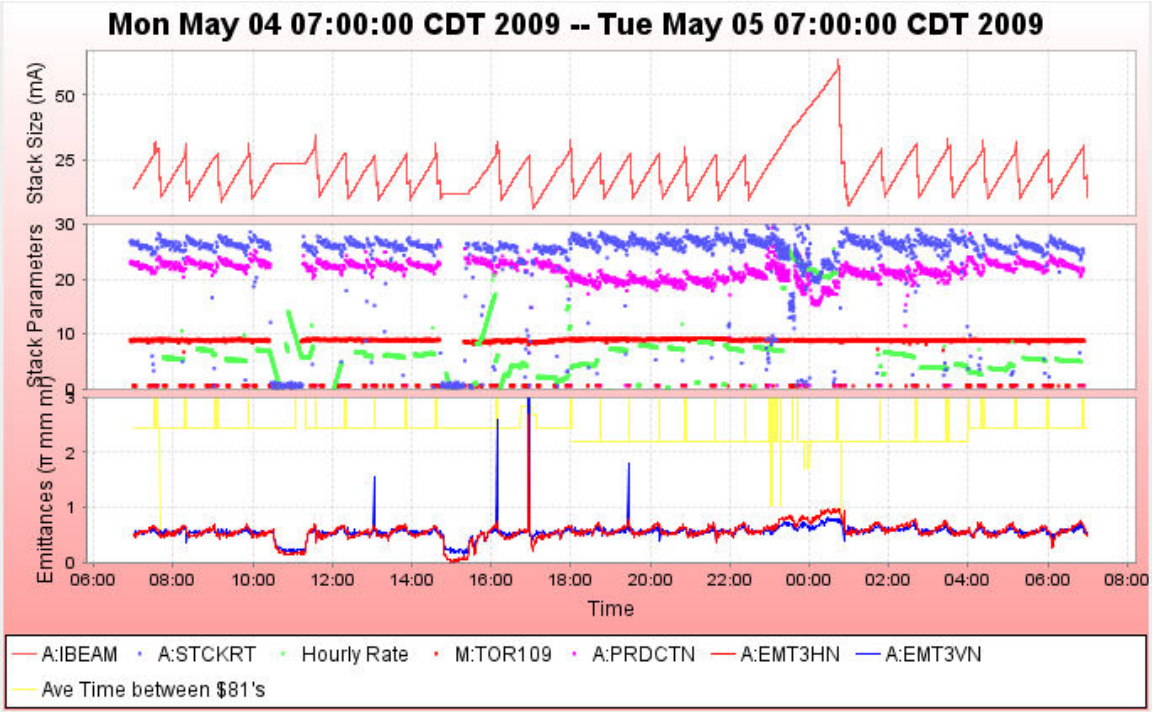
# 2009-05-05 Tuesday Pbar Notes

Monday, May 04, 2009
1:25 PM

## Stacking

- Stacked 550mA in 22.4 hours
  - <stacking rate> = 25.4mA
  - <production> = 20.98e-6/proton
  - <beam on target> = 8.25e10
- Raised A:IKIK module #1 voltage +1KV to around 58KV and continue to monitor vacuum activity as we condition the cavity. Note: The original setting of the kicker module was 60.2KV before our failure and subsequent conditioning.
- The Debuncher notch filter delay D:POTMF had some controls issues where the setting did not match the readback. This is a PLC feature. After the PLC is glitched or rebooted, the delay is zeroed out. To get back to the proper setting, you need to send a slightly different value so the controller knows it needs to move, and then send the desired value.

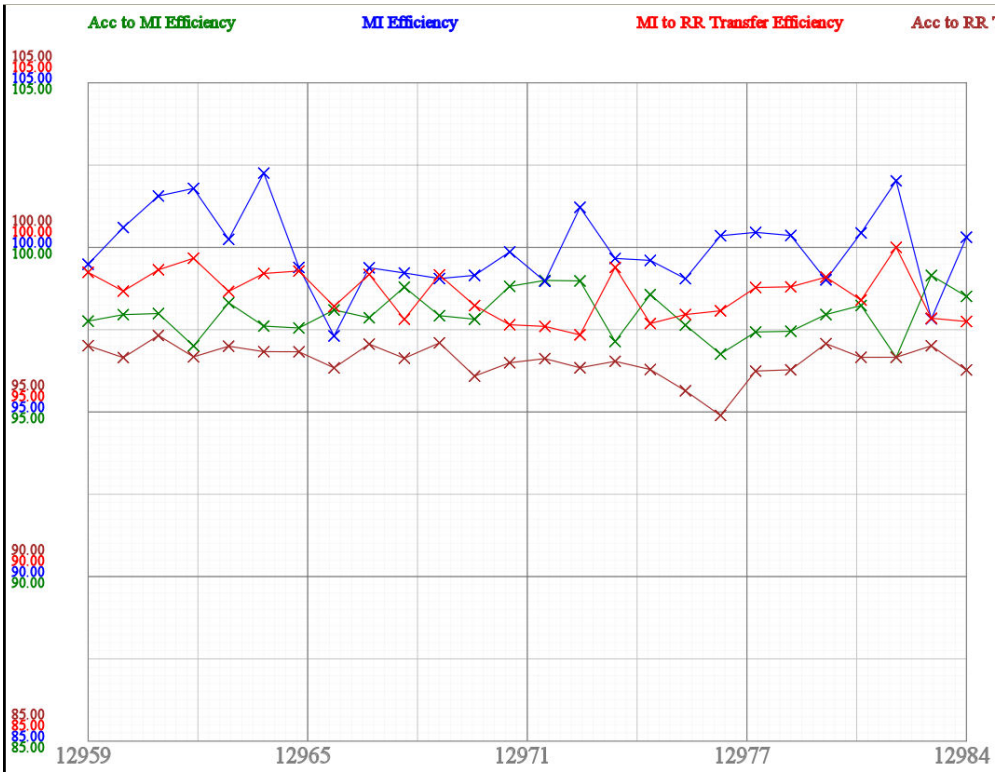


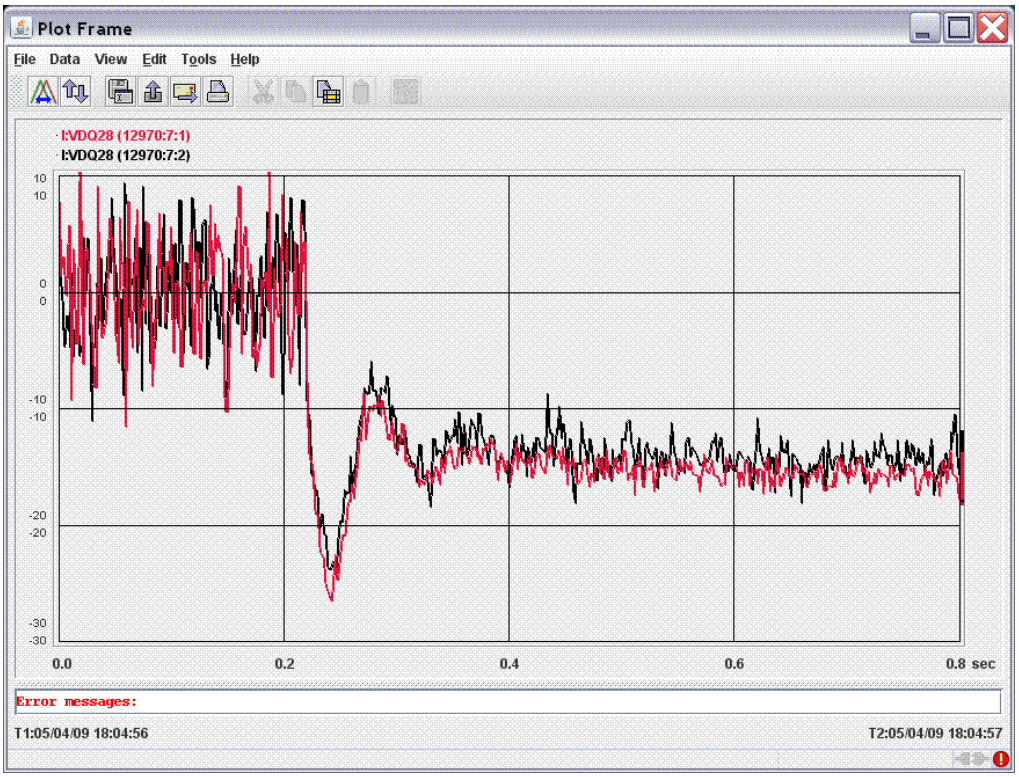

## Transfers

- Transferred 531e10 in 53 transfers over 25 sets
  - Average efficiency from Accumulator to Recycler was 96.4%
- We had six transfers on the evening shift (18:00 until 2140) that had energy errors between the Accumulator and Recycler. This was during the period of the $29 stacking-only events. During this time changes were made in the MI to RPOS and MBOFF. When the changes were put back, when the $23 Numi+stacking events returned, the energy error went away.

| Column 1 Number_0_Pbar Transfer Shot # | Column 4 Number_3_Transfer Time | | Column 21 Number_20_A:IBEAMB sampled on $91 (A:BEAM7), E10 | Column 22 Number_21_A:IBEAMB sampled on $94 (A:BEAM9), E10 | Unstacked (mA) | Column 23 Number_22_R:BEAMS (R:BEAME0[0]) pre xfer E10 | Column 24 Number_23_R:BEAM (R:BEAME0[1]) post xfer, E10 | Stashed | Acc to RR Eff | Acc to MI Eff | Acc to MI2 Eff | Transfers | Sets | Column 5 Number_4_Acc Horizontal Emittance | Column 6 Number_5_Acc Vertical Emittance | Column 8 Number_7_Acc Longitudinal Emittance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Totals => | | | | 531.79 | | | 512.40 | 96.35% | 97.87% | 97.83% | 53 | 25 | 5.2543 | 4.9437 | 1.8753 |
| 12983 | Tuesday, May 05, 2009 | 6:01 | 28.67 | 10.04 | 19.93 | 167.37 | 186.64 | 19.31 | 96.88% | 99.27% | 97.09% | 2 | 1 | 4.956 | 4.649 | 1.878 |
| 12982 | Tuesday, May 05, 2009 | 4:24 | 28.90 | 10.12 | 20.02 | 148.39 | 167.69 | 19.35 | 96.65% | 96.68% | 98.35% | 2 | 1 | 5.004 | 4.771 | 1.905 |
| 12981 | Tuesday, May 05, 2009 | 3:33 | 29.56 | 9.89 | 20.93 | 128.32 | 148.53 | 20.24 | 96.68% | 98.30% | 98.40% | 2 | 1 | 4.862 | 4.867 | 1.869 |
| 12980 | Tuesday, May 05, 2009 | 2:42 | 31.03 | 10.55 | 21.72 | 107.53 | 128.56 | 21.08 | 97.02% | 97.96% | 97.30% | 2 | 1 | 5.218 | 4.942 | 1.86 |
| 12979 | Tuesday, May 05, 2009 | 1:49 | 31.55 | 10.75 | 21.92 | 86.71 | 107.72 | 21.09 | 96.22% | 97.31% | 97.32% | 2 | 1 | 5.86 | 5.218 | 1.87 |
| 12978 | Tuesday, May 05, 2009 | 0:45 | 29.21 | 10.70 | 19.80 | 67.90 | 86.87 | 19.02 | 96.10% | 97.46% | 97.68% | 2 | 1 | 5.684 | 5.121 | 1.875 |
| 12977 | Tuesday, May 05, 2009 | 22:23 | 61.08 | 7.22 | 58.74 | 12.66 | 67.94 | 55.44 | 94.38% | 96.87% | 97.31% | 5 | 1 | 6.368 | 5.726 | 1.964 |
| 12976 | Monday, May 04, 2009 | 21:39 | 26.87 | 9.51 | 18.65 | 367.38 | 385.07 | 17.84 | 95.68% | 97.78% | 97.04% | 2 | 1 | 5.595 | 5.358 | 1.893 |
| 12975 | Monday, May 04, 2009 | 20:54 | 27.06 | 9.51 | 18.81 | 350.67 | 368.67 | 18.10 | 96.20% | 98.49% | 98.26% | 2 | 1 | 5.213 | 5.051 | 1.883 |
| 12974 | Monday, May 04, 2009 | 20:14 | 25.96 | 9.12 | 18.05 | 334.37 | 351.68 | 17.43 | 96.59% | 96.94% | 96.56% | 2 | 1 | 5.324 | 5.098 | 1.865 |
| 12973 | Monday, May 04, 2009 | 19:29 | 27.81 | 10.05 | 19.02 | 317.15 | 335.38 | 18.34 | 96.39% | 98.83% | 99.94% | 2 | 1 | 5.587 | 4.917 | 1.886 |
| 12972 | Monday, May 04, 2009 | 18:45 | 27.35 | 10.01 | 18.60 | 300.12 | 317.97 | 17.96 | 96.59% | 99.01% | 98.51% | 2 | 1 | 5.394 | 4.881 | 1.855 |
| 12971 | Monday, May 04, 2009 | 18:01 | 27.48 | 9.80 | 18.93 | 282.70 | 300.85 | 18.25 | 96.41% | 98.74% | 98.54% | 2 | 1 | 5.337 | 4.904 | 1.877 |
| 12970 | Monday, May 04, 2009 | 16:58 | 29.41 | 10.30 | 20.38 | 263.83 | 283.33 | 19.58 | 96.09% | 97.89% | 97.61% | 2 | 1 | 5.094 | 4.947 | 1.871 |
| 12969 | Monday, May 04, 2009 | 16:11 | 26.96 | 6.52 | 20.69 | 244.49 | 264.48 | 20.07 | 97.03% | 98.04% | 96.98% | 2 | 1 | 4.054 | 4.057 | 1.77 |
| 12968 | Monday, May 04, 2009 | 14:38 | 28.59 | 9.70 | 20.16 | 225.51 | 244.94 | 19.48 | 96.65% | 98.96% | 98.43% | 2 | 1 | 5.124 | 5.181 | 1.872 |
| 12967 | Monday, May 04, 2009 | 13:52 | 27.33 | 9.91 | 18.69 | 208.30 | 226.28 | 18.11 | 96.89% | 97.74% | 97.55% | 2 | 1 | 5.093 | 4.978 | 1.886 |
| 12966 | Monday, May 04, 2009 | 13:05 | 27.55 | 9.53 | 19.27 | 190.09 | 208.62 | 18.56 | 96.30% | 98.06% | 95.64% | 2 | 1 | 5.468 | 5.026 | 1.865 |
| 12965 | Monday, May 04, 2009 | 12:19 | 27.07 | 9.35 | 19.03 | 172.09 | 190.42 | 18.39 | 96.63% | 97.82% | 97.05% | 2 | 1 | 5.057 | 4.96 | 1.88 |
| 12964 | Monday, May 04, 2009 | 11:36 | 27.81 | 9.83 | 19.27 | 153.73 | 172.35 | 18.66 | 96.84% | 97.75% | 99.92% | 2 | 1 | 5.219 | 4.913 | 1.84 |
| 12963 | Monday, May 04, 2009 | 9:54 | 30.63 | 10.83 | 21.04 | 133.62 | 153.97 | 20.40 | 96.98% | 98.45% | 98.41% | 2 | 1 | 5.257 | 4.939 | 1.867 |
| 12962 | Monday, May 04, 2009 | 9:07 | 27.33 | 9.82 | 18.80 | 115.82 | 133.99 | 18.18 | 96.68% | 97.23% | 98.56% | 2 | 1 | 5.332 | 5.018 | 1.901 |
| 12961 | Monday, May 04, 2009 | 8:20 | 27.80 | 8.90 | 20.20 | 96.36 | 115.92 | 19.63 | 97.18% | 97.92% | 99.26% | 2 | 1 | 4.897 | 4.401 | 1.866 |
| 12960 | Monday, May 04, 2009 | 7:37 | 27.23 | 9.62 | 18.91 | 78.23 | 96.47 | 18.27 | 96.62% | 97.81% | 98.28% | 2 | 1 | 5.261 | 4.946 | 1.884 |
| 12959 | Monday, May 04, 2009 | 6:39 | 29.60 | 10.67 | 20.24 | 58.76 | 78.36 | 19.63 | 96.96% | 97.54% | 96.89% | 2 | 1 | 5.1 | 4.724 | 1.9 |

| Column 4 Number_3_Transfer Time | | Column 21 Number_20_A:IBEAMB sampled on $91 (A:BEAM7), E10 | Column 22 Number_21_A:IBEAMB sampled on $94 (A:BEAM9), E10 | Unstacked (mA) | Column 23 Number_22_R:BEAMS (R:BEAME0[0]) pre xfer E10 | Column 24 Number_23_R:BEAM (R:BEAME0[1]) post xfer, E10 | Stashed | Acc to RR Eff | Acc to MI Eff | Acc to MI2 Eff | Transfers | Sets | Column 5 Number_4_Acc Horizontal Emittance | Column 6 Number_5_Acc Vertical Emittance | Column 8 Number_7_Acc Longitudinal Emittance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Totals => | | | | 473.04 | | | 456.96 | 96.60% | 98.00% | 97.89% | 53 | 24 | 5.2079 | 4.9111 | 1.8716 |




Studies

Requests

The Numbers

- Paul's numbers
- Al's numbers
  - Stacking
    - Pbars stacked: 550.17 E10
    - Time stacking: 22.36 Hr

- Time stacking: 22.36 Hr
- Average stacking rate: 24.60 E10/Hr

- Uptime
  - Number of pulses while in stacking mode: 34140
  - Number of pulses with beam: 33349
  - Fraction of up pulses was: 97.68%

- The uptime's effect on the stacking numbers
  - Corrected time stacking: 21.84 Hr
  - Possible average stacking rate: 25.19 E10/Hr
  - Could have stacked: 563.22 E10/Hr

- Recycler Transfers
  - Pbars sent to the Recycler: 553.00 E10
  - Number of transfers : 55
  - Number of transfer sets: 26
  - Average Number of transfer per set: 2.12
  - Time taken to shoot including reverse proton tuneup: 00.33 Hr
  - Transfer efficiency: 95.96%

- Other Info
  - Average POT : 8.25 E12
  - Average production: 19.99 pbars/E6 protons

- * Missed one or more A:IBEAM7 events somewhere in the middle of the user selected time span. Calculated time shot using 13 secs per transfer.
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Misc

Logbooks

A:IKIK module #1, raised +1KV to 58.4KV